

*Neonesthes gnathoprora*, a New Species of Astronesthid Fish  
from the Atlantic Ocean<sup>1</sup>

DANIEL M. COHEN

*Natural History Museum, Stanford University, California*

(Text-figures 1-3)

THE specimen to be described, the sole known representative of a new species of astronesthid fish, was discovered among the deep-sea fishes collected by the Bermuda Oceanographic Expeditions of the New York Zoological Society and subsequently deposited in the Natural History Museum of Stanford University.

NEONESTHES GNATHOPRORA, n. sp.

*Holotype*: S. U. 46381, a female, 127 mm. in standard length; collected from the *Gladisfen* by the Bermuda Oceanographic Expeditions, 1929-1930, of the New York Zoological Society; meter net no. 388 at a depth of 1,646 meters. Locality, an eight-mile cylinder, the center at 32° 12' N. Lat. and 64° 36' W. Long. off Bermuda (see Beebe, 1931, for further details concerning locality and collecting data).

*Diagnosis*: *Neonesthes gnathoprora* differs from all three of the previously described species of the genus in its lack of a ventral adipose fin and lack of large photophores in well-defined series, and by having the anterior projection of the subocular luminous gland completely covered by a pigmented layer. In fin counts and proportions it seems closest to *N. macrolychnus*, differing only in a slightly more slender body and short head. *N. gnathoprora* differs from *N. microcephalus* in having a larger head and a higher dorsal and anal count and from *N. nicholsi* in having a larger head, smaller eye, shorter barbel and higher dorsal and anal count.

*Description*: Body elongate, the greatest depth immediately posterior to the head, tapering to the least depth at the caudal peduncle. Pelvic, dorsal and anal fins elevated from the body. Base of dorsal adipose fin not elevated. Ventral adipose fin absent. Scales absent. Origin of dorsal

closer to caudal than snout; dorsal origin closer to base of pelvics than to origin of anal; origin of pelvic fins closer to origin of pectoral fins than to origin of anal fin.

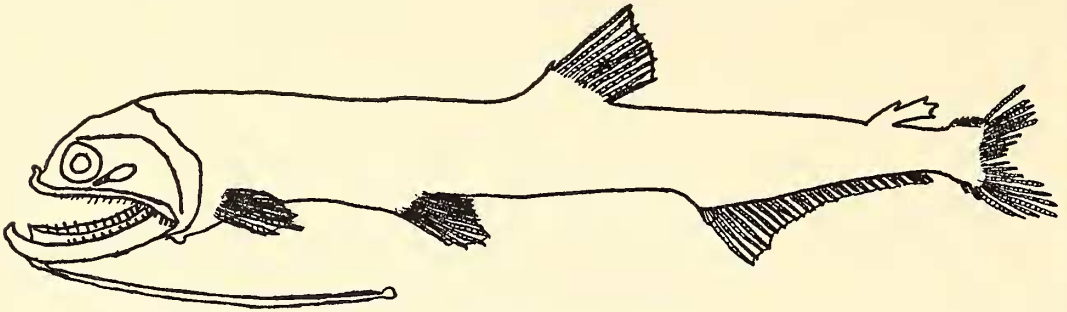
Head relatively short; maxillary extending far backwards, its posterior end 20 mm. from tip of snout. Anterior end of premaxillary retrorsely rounded at the symphysis, forming a notch for the reception of the prow-shaped lower jaw. Snout shorter than the eye. Needle-like teeth present on the maxillaries, premaxillaries, mandibles, palatines and ceratohyals. One tooth present on the vomer. Gill rakers stronger than the jaw teeth, resembling the ceratohyal teeth.

Barbel present, reaching slightly past the origin of the last pelvic ray. The core is light brown and covered by an outer transparent sheath. A darkly pigmented area partially encircles the barbel at a distance of 4 mm. from its origin. The barbel terminates in a brown bulb approximately 1 mm. in length, which is inclosed in a continuation of the transparent sheath which covers the barbel. Proximal to the bulb is a darkly pigmented area which terminates the light brown core of the barbel. A filament originates at the proximal end of the bulb and extends for almost its entire length. Two small white areas are present lateral to the origin of the filament on the sides of the bulb. These may be the bases of other (lost?) filaments, or they may be minute photophores.

The color of the body in alcohol is a uniform dark brown, the head lighter colored, fins pale.

The large photophores which make up the series commonly used in the classification of astronesthid fishes are absent; however, smaller light organs are present. A somewhat similar situation has been recorded by Zugmayer (1913) in his description of *Astronesthes myriaster*. In *N. gnathoprora* the small light organs are sparsely distributed over the body with a greater

<sup>1</sup>Contribution No. 969, Department of Tropical Research, New York Zoological Society.



TEXT-FIG. 1. Holotype of *Neonesthes gnathoprora*  $\times 1$ .

concentration below the midline than above. Eleven pairs of small photophores form a pattern corresponding to the I-P series. Although small light organs are present in the other areas where counts are usually made, they are not given for this specimen because of the difficulty in identification of the series. In the head region light organs are present between the branchiostegal rays at both margins of the membranes, on the mandible, the maxillaries, the snout and the opercle, with fewer on the preopercle. A postocular luminous gland is present with a narrow subocular extension which is entirely covered by a black pigmented layer. Light organs are present mesad of the bases of the paired fins and at the base of the anal. They are sparsely distributed at the base of the caudal and absent from the base of the dorsal.

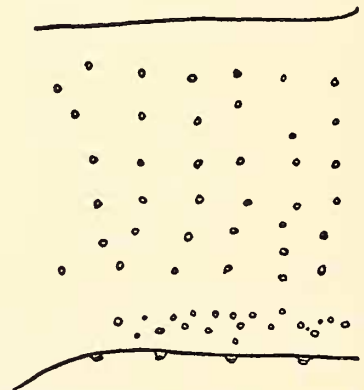
*Counts and Measurements:* Dorsal fin, 11; anal fin, 27; pelvic fins, 7-7; pectoral fins, 8-8; gill rakers on lower arm of 1st arch, 27; branchiostegal rays, 18-17. In the following measurements the first figure represents the measurement in mm.; the second figure is the percentage of the standard length. Greatest body depth, 19.0, 15.0; depth of caudal peduncle, 5.5, 4.3; head length, 23.2, 18.3; head depth, 18.5, 14.6; base of pectoral to origin of pelvic, 26.5, 20.8; base of pelvic to origin of anal, 36.2, 28.5; length of anal, 32.9, 25.9; last dorsal ray to insertion of adipose, 37.9, 29.8; length of barbel, 51.0, 40.2. In the following measurements the first figure represents the measurement in mm. while the second figure represents the percentage of head length. Eye, 5.3, 22.8; snout, 4.6, 19.8; postocular luminous gland (including anterior extension), 7.0, 30.2.

A slit present in the body wall slightly anterior to the right pelvic fin shows the body cavity to be filled with eggs. They are spherical in shape, orange and slightly less than 0.5 mm. in diameter.

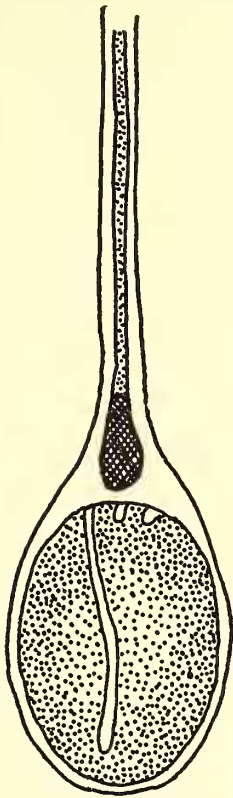
The name *gnathoprora* refers to the resemblance of the lower jaw to the prow of a ship.

*Discussion:* The following artificial key should serve to separate the known species of *Neonesthes*.

- 1a. Large photophores in well-defined series; ventral adipose fin present.
- 2a. Anal rays 23 or fewer; head into body length 6 times or more.  
*N. microcephalus* Norman, 1930, p. 307, fig. 16.
- 2b. Anal rays 25 or more; head into body fewer than 6 times.
- 3a. Barbel more than 3 times head length; filament present on bulb at end of barbel; eye into head more than 5 times.  
*N. nicholsi* Beebe, 1933, p. 161, fig. 1.
- 3b. Barbel less than 2 times head length; no filament present on bulb at end of barbel. Eye into head 5 times or less.  
*N. macrolychnus* Regan & Trewavas, 1929, p. 30, pl. 6, fig. 2.



TEXT-FIG. 2. Distribution of light organs on side of *Neonesthes gnathoprora*.  $\times 4$ . (Between base of dorsal and origin of anal).



TEXT-FIG. 3. Bulbular distal end of barbel of *Neonesthes gnathoprora*.  $\times 40$ .

- 1b. No large photophores in well-defined series; ventral adipose fin absent; anal rays 27; head into body 5.6 times; barbel 1.4-2.2 times head length; filament present on bulb at end of barbel; eye into head 4.4 times.

*N. gnathoprora* n. sp.

*Distribution of the Genus: Neonesthes* is, at the present, known only from the Atlantic. Three of the four species have been taken near Bermuda, probably because of the extensive deep-sea collecting in this area. *N. nicholsi* and *N. gnathoprora* are known only from the Bermuda area. *N. microcephalus* has been captured off of Angola in the South Atlantic. *N. macrolychnus* appears to be the most widely distributed species. It has the most southerly occurrence, at  $32^{\circ} 45'$  S. in the South Atlantic, and in the North Atlantic it has been taken near the Bahamas in the west, near the Cape Verde Islands in the east, and as far north as  $33^{\circ} 51'$ .

Following is a summary of the distribution of the species of *Neonesthes*.

*Neonesthes macrolychnus*

$15^{\circ} 50'$  N.  $26^{\circ} 30'$  W. Regan & Trewavas, 1929

$21^{\circ} 04'$  N.  $73^{\circ} 48'$  W. Regan & Trewavas, 1929  
 $28^{\circ} 15'$  N.  $56^{\circ} 00'$  W. Regan & Trewavas, 1929  
 $33^{\circ} 51'$  N.  $66^{\circ} 43'$  W. Regan & Trewavas, 1929  
 $31^{\circ} 47'$  N.  $41^{\circ} 41'$  W. Regan & Trewavas, 1929  
 $32^{\circ} 45'$  S.  $08^{\circ} 47'$  E. Norman, 1930  
 $32^{\circ} 07'$  N.  $64^{\circ} 37'$  W. Grey, 1955  
 $32^{\circ} 09'$  N.  $64^{\circ} 36'$  W. Grey, 1955  
 $32^{\circ} 12'$  N.  $64^{\circ} 36'$  W. S.U. 45423

*Neonesthes microcephalus*

$15^{\circ} 55'$  S.  $10^{\circ} 35'$  E. Norman, 1930

*Neonesthes nicholsi*

$32^{\circ} 12'$  N.  $64^{\circ} 36'$  W. Beebe, 1933

*Neonesthes gnathoprora*

$32^{\circ} 12'$  N.  $64^{\circ} 36'$  W.

$32^{\circ} 12.7'$  N.  $64^{\circ} 35.2'$  W. Grey, 1955<sup>1</sup>

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<sup>1</sup>Since this paper was written, Mrs. Marion Grey of the Chicago Natural History Museum kindly forwarded to the author the specimen which she listed (1955, p. 278) as *Neonesthes microcephalus*. Examination of her fish has shown it to be a specimen of *N. gnathoprora*, agreeing in most respects with the description given above. Her record of *N. microcephalus* from Bermuda should therefore stand as corrected.